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- (6) Handholds and fastenings;
- (7) Floor landings;
- (8) Guardrails;
- (9) Lubrication;
- (10) Safety switches;
- (11) Warning signs and lights;
- (12) Illumination;
- (13) Drive pulley;
- (14) Bottom (boot) pulley and clearance;
- (15) Pulley supports;
- (16) Motor;
- (17) Drive mechanism;
- (18) Brake;
- (19) Electrical switches;
- (20) Vibration and misalignment;
- (21) “Skip” on up or down run when mounting the step (indicating worn gears); and
- (22) Emergency exit ladders.

(b) *Inspection records.* Inspection records shall be kept for at least one year. The record of the most recent inspection shall be posted in the vicinity of the manlift or in the terminal.

(c) *Emergency stop.* An emergency stop device shall be available within easy reach from any position on the belt.

(d) *Instructions.* Manlift use instructions shall be conspicuously posted.

(e) *Top floor warning sign and light.* An illuminated sign and red light that are visible to the user shall be provided under the top floor opening of the manlift to warn the user to get off at that floor.

(f) *Bottom floor warning sign.* A sign visible to descending passengers shall be provided to warn them to get off at the bottom floor.

(g) *Upper limit stop.* An automatic stop device shall be provided to stop the manlift when a loaded step passes the top landing, except that manlifts installed after October 3, 1983 shall have two such devices.

(h) *Handholds and steps.* Each step shall be provided with a corresponding handhold.

(i) *Emergency ladder.* A fixed emergency ladder accessible from any position on the lift and in accordance with the requirements of §1917.118(d) shall be provided for the entire run of the manlift.

(j) *Landings.* (1) Clear and unobstructed landing spaces shall be provided at each level. Manlifts con-

structed after October 3, 1983 and that have a distance of 50 feet (15.24 m) or more between floor landings shall have an emergency landing every 25 feet (7.62 m) or less of manlift travel.

(2) Open sides of emergency landings shall be protected by guardrails.

(3) Floor landing entrances and exits shall be guarded by mazes, self-closing gates, or equivalent devices.

(4) Landings shall be of sufficient size and strength to support 250 pounds (1,112 N).

(k) *Floor opening guards.* The ascending sides of manlift floor openings shall be provided with cones or bevel guards to direct the user through the openings.

(l) *Maintenance.* Manlifts shall be equipped, maintained, and used in accordance with the manufacturer’s specifications, which shall be available at the terminal.

(m) *Bottom pulley.* (1) The lower pulley shall be supported by the lowest landing.

(2) Sides of the bottom pulley support shall be guarded to prevent contact with the pulley or the steps.

(n) *Top clearance.* A clearance of at least 11 feet (3.35 m) shall be provided between the top landing and the ceiling.

(o) *Brakes.* Manlifts shall be equipped with brakes that are:

- (1) Self-engaging;
- (2) Electrically released; and
- (3) Capable of stopping and holding the manlift when the descending side is loaded with the maximum rated load.

[48 FR 30909, July 5, 1983, as amended at 65 FR 40941, June 30, 2000]

§ 1917.118 Fixed ladders.

(a) *Scope and applicability.* This section applies to all fixed ladders except:

- (1) Ladders forming an integral part of railway cars, highway carriers, cargo containers or other transportation carrier equipment;
- (2) Climbing devices such as step bolts or structural members of tanks and towers;
- (3) Ladders built into or vertically attached to tubular scaffold framing; and
- (4) Ladders used only for fire-fighting or emergency purposes.

(b) *Definitions.* (1) *Cage* (basket guard) means a barrier enclosing or nearly enclosing a ladder's climbing space and fastened to one or both of the ladder's side rails or to another structure.

(2) *Fixed ladder* means a ladder, including individual rung ladders, permanently attached to a structure, building or piece of equipment.

(3) *Ladder safety device* means a support system limiting an employee's drop or fall from the ladder, and which may incorporate friction brakes, lifelines and lanyards, or sliding attachments.

(4) *Well* means a permanent complete enclosure around a fixed ladder, which is attached to the walls of the well.

(c) *Defects.* (1) Ladders with broken, split or missing rungs, steps or rails, broken welds or connections, corrosion or wastage or other defect which may affect safe use shall be removed from service.

(2) Ladder repairs shall provide strength at least equivalent to that of the original ladder.

(d) *Ladder specifications.* (1)(i) Ladders installed before October 3, 1983, shall be capable of withstanding without damage a minimum concentrated load, applied uniformly over a 3½ inch (8.9 cm) width at the rung center, of 200 pounds (890 N).

(ii) Ladders installed after October 3, 1983 shall be capable of withstanding 250 pounds (1,112 N) applied as described in paragraph (d)(1)(i) of this section. If used by more than one employee simultaneously, the ladder as a unit shall be capable of simultaneous additional loading in 250 pound (1,112 N) increments for each additional employee, applied to a corresponding number of rungs. The unit shall have a safety factor of four (4), based on ultimate strength, in the designed service.

(2)(i) Ladders installed before October 3, 1983, shall have rungs evenly spaced from nine to 16½ inches (22.9 to 41.9 cm) apart, center to center.

(ii) Ladders installed after October 3, 1983 shall have rungs evenly spaced from 12±2 inches (30.5±5.08 cm) apart, center to center.

(3)(i) Ladders installed before October 3, 1983 shall have a width between side rails of at least 10 inches (25.4 cm).

(ii) Ladders installed after October 3, 1983 shall have a width between side rails of at least 12 inches (30.48 cm).

(4) The minimum distance between the rung center line and the nearest permanent object behind the rung shall be 4 inches (10.16 cm), except that in ladders installed after October 3, 1983, the minimum distance shall be 7 inches (17.78 cm) unless physical limitations make a lesser distance, not less than 4½ inches (11.43 cm), necessary.

(5) When a ladder passes through an opening or past overhead obstructions, a minimum 24 inch (.61 m) clearance shall exist between the climbing side and any obstruction. Where this distance is less than 30 inches (0.76 m), a deflection device shall be installed for guidance through the opening.

(6) The side rails of ladders shall extend at least 36 inches (0.91 m) above the top landing surface, unless grab bars or equivalent holds are provided.

(7) Ladders whose pitch exceeds 90° to the horizontal (slanting backward on the climbing side) shall not be used.

(e) *Protection against falls.* (1) Fixed ladders more than 20 feet (6.1 m) in height shall be provided with a cage, well, or ladder safety device.

(2) When a well or cage is used, ladders with length of climb exceeding 30 feet (9.14 m) shall comply with the following provisions:

(i) The ladder shall consist of multiple sections not exceeding 30 feet (9.14 m) each;

(ii) Each section shall be horizontally offset from adjacent sections, except as specified in paragraph (e)(2)(iv) of this section, and

(iii) A landing platform capable of supporting a load of 100 pounds per square foot (4.79 kPa) and fitted with guardrails complying with Sec. 1917.112(c) shall be provided at least every 30 feet (9.14 m), except as specified in paragraph (e)(2)(iv) of this section.

(iv) For ladders installed after October 3, 1983, offset sections and landing platforms are not required if hinged platforms capable of supporting 100 pounds per square foot (4.79 kPa), and which are kept closed except when opened for passage, are within the cage or well at intervals not exceeding 30 feet (9.14 m).

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(3) Ladders equipped with ladder safety devices shall have rest platforms;

(i) Capable of supporting a load of 100 pounds per square foot (4.79 kPa);

(ii) Located at intervals of 150 feet (45.7 m) or less; and

(iii) Protected by guardrails complying with § 1917.112(c) of three sides.

(4) Where used, ladder safety devices shall:

(i) Be installed and maintained in accordance with the manufacturer's instructions, which shall be available for inspection;

(ii) Be repaired only with replacement parts having performance capability at least equal to that of the original parts;

(iii) Have a connection length between carrier centerlines and safety belts of 10±2 inches (25.4±5.08 cm); and

(iv) Be installed in a manner that does not reduce the ladder's structural capability.

(5) Ladder cages or wells shall:

(i) Be of rigid construction that allows unobstructed use but prevents an employee from falling through or dislodging the cage or well by falling against it;

(ii) Have smooth inner surfaces;

(iii) Extend at least 36 inches (0.91 m) above landings; and

(iv) Extend to within 8 feet (2.44 m) above the ground or base, except that a maximum of 20 feet (6.1 m) is permitted where the cage or well would extend into traffic lanes.

(6) Ladders installed after (effective date of standard) on radio, microwave communications, electrical power and similar towers, poles and structures, including stacks and chimneys, shall meet the requirements of this paragraph (e).

(f) *Individual rung ladders.* Ladders consisting of individual rungs that are attached to walls, conical manhole sections or river cells shall:

(1) Be capable of supporting a load of 350 pounds (1557 N) without deformation;

(2) Form a continuous ladder, uniformly spaced vertically from 12 inches to 16 inches (30.5 to 40.6 cm) apart, with a minimum width of 10 inches (25.4 cm) and projecting at least 4½ inches (11.43 cm) from the wall;

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(3) Be so constructed that an employee's foot cannot slide off the ends; and

(4) Be firmly attached and without sharp edges.

[48 FR 30909, July 5, 1983, as amended at 62 FR 40201, July 25, 1997; 65 FR 40941, June 30, 2000]

§ 1917.119 Portable ladders.

(a) *Scope and applicability.* This section applies to all portable ladders, including job-made ladders for temporary use, unless otherwise specified.

(b) *Standards for existing manufactured portable ladders.* (1) Rungs of manufactured portable ladders obtained before October 3, 1983, shall be capable of supporting a 200-pound (890 N) load without deformation.

(2) Rungs shall be evenly spaced from 9 to 16½ inches (22.9 to 41.9 cm), center to center.

(3) Rungs shall be continuous members between rails. Each rung of a double-rung ladder (two side rails and a center rail) shall extend the full width of the ladder.

(4) Width between side rails at the base of the ladder shall be at least 12 inches (30.48 cm) for ladders 10 feet (3.05 m) or less in overall length, and shall increase at least ¼ inch (0.64 cm) for each additional 2 feet (0.61 m) of ladder length.

(c) *Standards for manufactured portable ladders.* Portable manufactured ladders obtained after January 21, 1998 shall bear identification indicating that they meet the appropriate ladder construction requirements of the following standards:

ANSI A14.1–1990, Safety Requirements for Portable Wood Ladders

ANSI A14.2–1990, Safety Requirements for Portable Metal Ladders

ANSI A14.5–1992, Safety Requirements for Portable Reinforced Plastic Ladders

(d) *Standards for job-made portable ladders.* Job-made ladders shall:

(1) Have a minimum and uniform distance between rungs of 12 inches (30.48 cm), center to center;

(2) Are capable of supporting a 250-pound (1,112 N) load without deformation; and